

Application No. 09/932,430
Amendment dated May 11, 2005
Reply to Office Action of January 11, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application. By this Amendment, claims 13-17, 19, 21, 30-33, 36, and 38 have been canceled. Claims 1-12, 18, 20, 22-29, 34, 35, and 37 were previously canceled. No new matter has been added.

Claims 1-38 (canceled).

Claim 39 (currently amended) A method of manufacturing a golf club head, the method comprising:

forming a unitary body having a crown, a skirt, and a sole, and a face, the unitary body face defining a front opening, ~~the crown having a thickness of less than about 0.8 mm over at least a crown transition distance of about 20 mm measured rearward from the front opening;~~

forming a striking plate from a material ~~comprising a titanium alloy;~~ and

attaching the striking plate to the front opening of the unitary body;

wherein the crown has a crown transition region extending from a junction of the face and the crown rearwards about 20 mm, and wherein the thickness of the crown within at least the crown transition region is less than 0.8 mm.

Claim 40 (previously presented): The method of claim 39, wherein the unitary body is formed from a titanium alloy.

Claim 41 (previously presented): The method of claim 39, wherein the crown is formed having a substantially constant thickness of about 0.7 mm.

Claim 42 (previously presented): The method of claim 39, wherein the unitary body is formed having a height ranging from approximately 45 mm to 60 mm.

Claim 43 (previously presented): The method of claim 39, wherein the striking plate is formed with a maximum thickness of less than or equal to 2.2 mm.

Claim 44 (previously presented): The method of claim 43, wherein the striking plate is formed having a maximum thickness ranging from approximately 2.0 mm to 2.2 mm.

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Claim 45 (previously presented): The method of claim 43, wherein the striking plate is formed having a maximum thickness of about 1.7 mm measured at a geometric center of the striking plate.

Claim 46 (currently amended): The method of claim 39, wherein the striking plate is formed having a peripheral thickness that is at least 0.5 mm less than ~~the a thickness measured at the a~~ geometric center of the striking plate's geometric center plate.

Claim 47 (previously presented): The method of claim 39, wherein the striking plate is formed from a material having an ultimate tensile strength of at least about 1400 MPa, a yield strength of at least about 1250 MPa, a hardness of at least about 30 HRC, a percent elongation of at least about 7%, and a density of less than about 5 g/cm³.

Claim 48 (previously presented): The method of claim 39, wherein the striking plate is formed from a material comprising a beta type titanium alloy or an alpha-beta type titanium alloy.

Claim 49 (previously presented): The method of claim 39, wherein forming the striking plate comprises at least one cold forming process.

Claim 50 (previously presented): The method of claim 39, wherein forming the striking plate comprises:

solution heat treating a titanium alloy sheet; and

cold forming the titanium alloy sheet to achieve cold working ranging from about 15% to about 70%.

Claim 51 (previously presented): The method of claim 50, wherein forming the striking plate further comprises additional cold working to create a reduced peripheral thickness.

Claim 52 (previously presented): The method of claim 39, wherein the striking plate is formed to a height ranging from about 35 mm to about 50 mm.

Claim 53 (previously presented): The method of claim 39, wherein the striking plate is formed to a width/height ratio ranging from about 1.0 to about 1.7.

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Claim 54 (currently amended): A method of manufacturing a golf club head, the method comprising:

forming a unitary body having a crown, a skirt, and a sole, and a face, ~~the unitary body face defining a front opening, the sole having a thickness of less than about 1.0 mm over at least a sole transition distance of about 20 mm measured rearward from the front opening;~~

forming a striking plate ~~from a material comprising a titanium alloy;~~ and

attaching the striking plate to the front opening of the unitary body;

wherein the sole has a sole transition region extending from a junction of the face and the sole rearwards about 20 mm, and wherein the thickness of the sole within at least the sole transition region is less than 1.0 mm.

Claim 55 (new): The method of claim 54, wherein the unitary body is formed from a titanium alloy.

Claim 56 (new): The method of claim 54, wherein the crown is formed having a substantially constant thickness of about 0.7 mm.

Claim 57 (new): The method of claim 54, wherein the unitary body is formed having a height ranging from approximately 45 mm to 60 mm.

Claim 58 (new): The method of claim 54, wherein the striking plate is formed with a maximum thickness of less than or equal to 2.2 mm.

Claim 59 (new): The method of claim 58, wherein the striking plate is formed having a maximum thickness ranging from approximately 2.0 mm to 2.2 mm.

Claim 60 (new): The method of claim 58, wherein the striking plate is formed having a maximum thickness of about 1.7 mm measured at a geometric center of the striking plate.

Claim 61 (new): The method of claim 54, wherein the striking plate is formed having a peripheral thickness that is at least 0.5 mm less than a thickness measured at a geometric center of the striking plate.

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Claim 62 (new): The method of claim 54, wherein the striking plate is formed from a material having an ultimate tensile strength of at least about 1400 MPa, a yield strength of at least about 1250 MPa, a hardness of at least about 30 HRC, a percent elongation of at least about 7%, and a density of less than about 5 g/cm³.

Claim 63 (new): The method of claim 54, wherein the striking plate is formed from a material comprising a beta type titanium alloy or an alpha-beta type titanium alloy.

Claim 64 (new): The method of claim 54, wherein forming the striking plate comprises at least one cold forming process.

Claim 65 (new): The method of claim 54, wherein forming the striking plate comprises:
solution heat treating a titanium alloy sheet; and
cold forming the titanium alloy sheet to achieve cold working ranging from about 15% to about 70%.

Claim 66 (new): The method of claim 65, wherein forming the striking plate further comprises additional cold working to create a reduced peripheral thickness.

Claim 67 (new): The method of claim 54, wherein the striking plate is formed to a height ranging from about 35 mm to about 50 mm.

Claim 68 (new): The method of claim 54, wherein the striking plate is formed to a width/height ratio ranging from about 1.0 to about 1.7.

Claim 69 (new): A method of manufacturing a golf club head, the method comprising:
casting a unitary body having a crown, a skirt, a sole, and a face, the face defining a front opening, wherein the unitary body is cast from a material comprising titanium;
cold forming a striking plate, the striking plate having a maximum thickness of less than or equal to 2.2 mm and a peripheral thickness at least 0.5 mm less than a thickness measured at a striking plate geometric center, wherein the striking plate is cold formed from a material comprising titanium and having an ultimate tensile strength of at least about 1400 MPa, a yield

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strength of at least about 1250 MPa, a hardness of at least about 30 HRC, a percent elongation of at least about 7%, and a density of less than about 5 g/cm³; and

welding the striking plate to the front opening of the unitary body;

wherein the crown has a crown transition region extending from a junction of the face and the crown rearwards about 20 mm, the thickness of the crown within at least the crown transition region less than 0.8 mm, and wherein the sole has a sole transition region extending from a junction of the face and the sole rearwards about 20 mm, the thickness of the sole within at least the sole transition region less than 1.0 mm.